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American Social Science Association.

A REPORT ON SCHOOL HYGIENE.

✓
BY D. F. LINCOLN, M. D.

HYGIENE IN SCHOOLS AND COLLEGES.

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BY ALFRED L. CARROLL, M. D.



PRINTED FOR THE AMERICAN SOCIAL SCIENCE ASSOCIATION,
At the Riverside Press, Cambridge, Mass.
1874.

THE JOURNAL OF SOCIAL SCIENCE has been hitherto an occasional publication, appearing at irregular intervals, but usually once a year. During the years 1872-3, only one number was published; in 1874 two have been issued. It is hoped hereafter to publish it semi-annually, and perhaps oftener, so as to furnish in each year a volume of at least 500 pages to the members of the Association, and to those individuals and libraries that may prefer to receive it by subscription. It will be published at the rate of One Dollar for 200 pages, however often it may appear, and subscriptions for the numbers at that rate may be sent either to the publishers, or to the editor (F. B. Sanborn, 5 Pemberton Square, Boston), the Secretary of the Association.

The Journal includes, in the first place, the Transactions of the Association; that is, the proceedings at its meetings, general or special, the papers read at those meetings, and such reports of the discussions as are made; and in the second place, other papers prepared for the Association, or relating to its work. Numbers Six and Seven, for instance, contain nearly all the papers read at the New York Meeting in May, 1874; and also, other papers or extracts from papers relating to the topics treated at that meeting. For the convenience of subscribers, certain topics are grouped together in Number Six; as, for example, those relating to Public Charities and Finance; others, relating to Public Health and Education are grouped in Number Seven. The latter also contains a record of facts and events, at home and abroad, which may be supposed to interest students of Social Science. All such, and particularly members of the Association, are invited to contribute statistics, reports, or any data whatever which can properly find a place in the Journal.

Number Six was published in July, 1874; Number Seven in September, and Number Eight may be expected early in 1875. Number Five was published in October, 1873. The table of contents of Numbers Five and Six is appended. Number Seven contains the papers on Sanitary subjects read at the New York Meeting; the papers of Presidents Woolsey and White, and other important matter. Number Eight will contain the proceedings of the Annual Meeting in October; the reports, papers, and discussions thereat, and some account of the British Social Science Congress at Glasgow.

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A REPORT ON SCHOOL HYGIENE.

READ MAY 21, 1874, BY D. F. LINCOLN, M. D., SECRETARY OF THE DEPARTMENT OF HEALTH.

HAVING been requested to prepare a Report upon the subject of the Health of Schools, for presentation at this Meeting, I have thought it best to arrange what I had to say in accordance with a list of topics which has been drawn up by the Department of Health, and which covers, or nearly covers, the whole of the ground in question. Some of these topics have been assigned to certain of our members, for original investigations and reports. If possible, we design to secure such investigations, by competent persons, upon all of the points here given, with a view of presenting the united results to the public at some future time; of which due notice will be seasonably given, in order that all interested in the health of schools may be able to take a personal share in the discussion of what we have to present. The list of topics is as follows:—

1. Heating and Ventilation.
2. Light — and condition of the scholars' eyes.
3. Seats — and deformities traceable to them.
4. Architectural Plans.
5. Apparatus employed in Instruction.
6. Gymnastics.
7. Condition of Nervous System.
8. Organ of Hearing.
9. Organs of the Pelvic Cavity.
10. Drinking Water.
11. Sewage, and Water-closets.
12. Commissions for Scientific Inspection of given School-areas.
13. Project of a law, establishing the office of Medical Inspector of Schools.

1. The air furnished for the use of the school-room ought to be heated in some way before it is brought into the room; it should not be roasted, so to speak, but should contain sufficient moisture. As regards the way of getting rid of the air, when polluted and deprived of its oxygen, it remains an unsettled question whether we ought to employ suction to withdraw the air, like the suction exercised by a chimney, or whether we should simply force warm air into the room and trust to its

elasticity to force its own way out by cracks in the windows or special openings in the walls. It is, however, certain that good ventilation must be expensive, for two reasons: First, that when impure air is expelled, we expel with it a great deal of heat, which is for the most part absolutely thrown away; there is no help for it; it must go up the chimney, or out of window, and the sooner the better. Second, *adequate* ventilation in a *crowded* room implies a dangerous amount of draught of air; and there is scarcely a public school-room in existence that is not so crowded that the attempt to bring in enough fresh air would be improper, because perilous to the pupils' health. For this, the remedy is only to be found in placing fewer scholars in one room; and if you do this, you have to build more rooms. But it can hardly be necessary to remind you, that expense incurred in improving ventilation will prove a good investment, if it saves your children headaches, indigestion, sleepless nights, listless days, coughs, and the disposition to take cold, pale cheeks, and poor appetites.

I will not delay you with statements about carbonic acid, and the other chemical ingredients of pure or impure air, but will pass on to some of the other topics.

2. It is well known, from foreign sources, that school-work is often bad for scholars' eyes. The best-known series of observations upon this point comes from Dr. Cohn of the Prussian town of Breslau. He has found that near-sightedness increases in a rapid ratio, proportionally with the advancement of the pupils in their studies. Very young children in school have little or no trouble; while of the oldest scholars in the high schools more than one half are near-sighted. The causes of this difficulty are various; among those susceptible of a remedy the following may be mentioned:—

- (a.) Badly printed text-books.
- (b.) The use of so-called German text and Greek type.
- (c.) Badly lighted rooms.
- (d.) Light coming from in front, and so dazzling the pupils' eyes.
- (e.) Too sombre or too brilliant coloring of the walls of the room.
- (f.) Desks which are too high and bring the book close to the eye.
- (g.) Desks which are too low, and compel the pupil to stoop over in reading, or writing more especially, whereby the blood is made to gravitate to the head; the pressure of the collar upon the neck of course makes matters worse.
- (h.) Over-heated rooms make the face flush, and add decidedly to the evil effects of all the above causes.
- (i.) Injudicious selection of the hour for out-of-school study; for example, when pupils in boarding-schools are expected to study by lamp-light in the morning.

Not one of these is in the least an imaginary cause of harm to the eyes. All are important and real. But doubtless there are other reasons for the fact that the Germans are a spectacled nation; reasons which I must confess that I do not fully understand. Taking our own schools at large, it is certain that no such deterioration of vision has *as yet* occurred among the children. Observations upon this point are very few among us. But I think I may safely say — and appeal to you for confirmation of the fact — that near-sight has begun to prevail very largely among those families in our own country, in which the children, for a generation or two, have been thoroughly trained in studies which are *not mere accomplishments*, as German, Greek, and mathematics. If my hearers can refute this statement, I should be very glad to be convinced of its incorrectness.

3. School seats are bad when the scholar can stand up between the desk and seat; because, in such a case, the scholar in sitting has to bend forward very much in order to reach his desk. It is necessary to bring the lid of the desk somewhat over the edge of the seat; it is also a good plan to make the lid in two pieces, so that the near piece swings up on hinges, furnishing a book-holder, when not used to write upon.

Seats with too little support, or with an uncomfortable support, give pain, increase the natural restlessness of the children, and tempt them irresistibly to put themselves in all sorts of bad postures, which give rise (especially in the case of girls) to spinal deformities.

One of the most important agents in counteracting this tendency — a tendency so serious, that it sometimes impresses itself on the forms of almost all the girls in a given school — is the frequent and judicious use of light gymnastics. For my own part, I would not confine the recommendation to light gymnastics, but would strongly advise that the chest should be developed by the parallel bars; and this more especially in the case of girls than of boys, for girls, in accordance with the laws of human society, have less chance to use their chests and arms than boys have ¹

In regard to the whole subject of gymnastics, we expect next year to present a thorough report from a specialist in this department, a gentleman who forms one of our Committee. But I must dwell for a moment longer on this point, simply to add that a large school-yard, sheltered from public view, is doubly desirable, both as furnishing room

¹ I am much obliged to Dr. Frederic Winsor, author of a paper upon the Health of Schools in the last Report of the Massachusetts Board of Health, for the following criticism: "As an old gymnast I feel the great importance of close supervision of all the heavier gymnastics by a judicious and *experienced* teacher. The parallel bars need great judgment. — F. W."

for open air exercise, and as insuring an abundant supply of sunlight in the school-rooms.

7. In speaking of the effects of school life upon the nervous system, I would not dwell upon any positive disease — such as St. Vitus's Dance — which may be traceable to school work, but would beg to protest, rather, against the lamentable perversion and inversion of what ought to be the aim of all school life. For, whereas a proper amount of real study is a sure means of strengthening the health and improving the bodily development, we have given our children so much work, that the result of each day's work is immediate lassitude. And whereas the stimulus of mental energizing is one of the best tonics in the world, we have converted it by our system of prizes — of grinding, useless drill for examinations, of rank lists, of confinement to painfully dull subjects, to the exclusion of a right training of the pupil's powers of original observation; by all sorts of poisonous influences in the school-room air — to one of the severest strains upon the child's natural powers that could be devised.

In the recent report of Dr. Winsor to the Massachusetts Board of Health, it appears that a very large majority of the correspondents of the Board believe that the injurious effects of schools are mainly referable to their action on the nervous system.

It is not stepping beyond our functions as health officers to insist upon the incorrectness of the school routine now prevalent. The child's health depends much upon being allowed frequent change of posture; yet how commonly are the scholars kept for one or two hours at a time in their seats! His mental discipline, his efficiency in all that makes him a good pupil, is greatly injured by too long vacations; his bodily health, even, is not benefited by a two months' course of aimless idleness; yet the tendency of our day is decidedly in favor of long vacations. His *morale* is good, in direct proportion as he comes into friendly relations with his teacher; yet we know that in our great public schools it is next to impossible for a teacher, with forty, fifty, or sixty pupils, changed every year, to be to them anything more than an impersonation of fixed Fate and absolute Will. But it is necessary to pause here, in our enumeration of faults.

It is perhaps a new fact to most of you that there exists among school-teachers a form of deafness, largely due to the intense nervous strain brought upon their systems. The organ of hearing suffers, not from an "organic" disease localized in the ear, but as a mode of nervous exhaustion and breaking down. Similarly in the case of Charles Sumner, from the moment when his nervous system suffered that terrible shock, from injuries inflicted upon his head and spine, the functions of his heart began to be enfeebled; not because the heart was diseased,

but because his sum total of vital force was lowered, and the heart happened to be the organ where the strain was most felt. Our teachers are, all of them, exposed to the danger of breaking at the spot where their constitutions are weakest.

12. Among the projects we desire to see carried out is that of organized inspection of schools within given areas. Every important item in the health of the scholars and the arrangement of the buildings should be included in such inspection, and the results should be printed.

13. Finally, we have thought it worth while to charge one of our number, a member of the Bar, with the preparation of the form of a law, establishing the office of Inspector of Public Schools. Upon this point, the words of the Massachusetts State Board of Health may be quoted:—

“Every city should have a sanitary inspector and instructor of schools, who should be a physician.

“Every town board of health should have among its number a physician, whose duty it should be to pay a monthly visit to every scholar in town, and make a monthly sanitary report to the town and to the State Board of Health.”

NOTE. — Since the presentation of the above Report, it has been decided to attempt to secure measurements of the height and weight of large numbers of the pupils in our public schools. The results of such measurements will constitute a contribution to vital statistics, but may also turn out to be of importance in throwing light upon the health of schools. — D. F. LINCOLN.

HYGIENE IN SCHOOLS AND COLLEGES.

BY ALFRED L. CARROLL, M. D., OF NEW BRIGHTON, N. Y.

READ MAY 21, 1874.

I NEED make no apology for urging before the Social Science Association the too long neglected claims of Hygiene, to rank as one of the most important branches of sociological culture. Social Science, as I understand it, embraces the systematic study of those elements of human welfare which an old nursery rhyme groups together, as the results of early going to bed and early rising; but even in that ancient legend you will remember that health is put before wealth and wisdom — and very rightly so, since wealth can hardly be gained or enjoyed without health, and, as to wisdom, it is no modern discovery that the *mens sana* depends upon a *corpus sanum*. It is scarcely too strong a way of putting it, therefore, to say that hygiene should have the road for all other human advances, commercial, intellectual, and I might even add, moral; for, as you are aware, the most competent observers are inclined to attribute habitual crime in many instances to physical degeneration, and we have ecclesiastical authority for the assertion that the form of a man's religious belief is intimately connected with the state of his digestive organs.

And yet there is no subject of which mankind at large is more deplorably ignorant than of this code of health. In our educational courses we lay great stress upon classical and mathematical studies which, however excellent as means of mental discipline, may not be of practical use in the after life of nine tenths of our pupils; we teach them something of the laws which govern the community in which they live, and of the principles by which business pursuits are guided; we establish special curricula to fit them thoroughly for special vocations; but most of them are allowed to escape from our hands without learning anything of the rules of their physical existence, knowledge of which is of the utmost practical moment to every human being, whatsoever his or her pursuit. With very few exceptions our undergraduate academies are content to leave hygiene as an esoteric mystery of purely medical doctrine, forgetting that the preservation of health is a matter which almost exclusively concerns the non-medical public, whose intercourse with physicians seldom begins until after violation of sanitary laws has in-

duced actual disease when the time for the "ounce of prevention" is past, and the "pound of cure" alone is sought. In fact, unless the world at large will adopt the Chinese custom of paying doctors to keep their patients well and stopping their salaries during sickness, the laity should be better instructed in this respect than their professional advisers. But I have met erudite scholars to whom the differential calculus was as easy as the multiplication table, and Demosthenes lighter reading than Congressional debates, who were utterly devoid of any idea as to the functions of their own organs or the physiological relations of nitrogen, carbon, and oxygen. It is to this lack of the rudimentary knowledge which every one should possess, that we owe more than half the mortality of the world, and a very much larger proportion of its sickness. To this are due the appalling death-rate of infancy; the slow devitalization of children in overcrowded, ill-ventilated school-rooms; the crippling of operatives in deleterious trades; the myriad evil effects of sewage-poisoning, the generation and perpetuation of endemic diseases; the ravages of epidemic contagions; and, less directly, perhaps, but almost as surely, a great part of the intemperance and moral decadence which are as often the consequences as the causes of insanitary conditions among the poorer classes.

But apart from the prevention of specific maladies is the question of maintaining all the bodily functions in the best working order possible. Between perfect health and actual disease there lies a wide debatable border land, and it is herein that the teaching of personal hygiene should find its most fertile field. There are thousands of persons who are not ill enough to come under medical care, who have no pronounced disorder to which we can give a name, who are nevertheless far from being quite well. They can generate just enough vital energy to sustain a sort of vegetable existence, but are incapable of entering into active relations with the external world. They may pass current physiologically, as "greenbacks" do financially, — as indisputable legal tender, but considerably below par.

Of these, and of the classes that mark the gradations between them and thorough health, it is a mere truism to say that if any one with sound organs fail to enjoy the full measure of natural functional vigor, it is through violation of natural laws; the error sometimes arising from necessity, but far oftener from ignorance. Nay, even impaired organs can be made to do a creditable amount of work without discomfort by placing them under the most favorable hygienic conditions.

Surely, the knowledge how to employ one's vital energies to the best advantage, how not only to avoid preventable disease, but to maintain the highest standard of health compatible with one's physical organization, is quite as important as an intimate conversance with the minor

incidents of the French Revolution, or proficiency in the nomenclature of far western post-villages.

I am aware that in a few isolated instances instruction in hygiene is nominally afforded to advanced classes, but nowhere, as far as I have heard, is sufficient prominence accorded to it. Even in my own profession, of the thirty-seven medical colleges in the United States, I know of but four that have chairs of hygiene; in the rest this weighty subject, if touched upon at all, is relegated to two or three lectures interpolated in a course on surgery, or materia medica, or some other equally relevant topic. It seems to me that in no direction could the influence of the Social Science Association be more profitably exerted than in an endeavor to change all this.

Hygiene, the most practically useful of sciences, should be made an essential feature of every grade of education and taught with the thoroughness it merits. It should be introduced in all normal schools as an obligatory part of the training of teachers, in order that its rudiments might be imparted even to the pupils in primary class-rooms wherein are found the children of the poor, who stand in greatest need of its counsel. From the lowest form up to the graduating class of every college I would give it a progressive course, as is done with mathematics, classics, and, indeed, all other branches of tuition; not necessarily particularizing all the recondite technicalities which are requisite for the professed sanitarian, but comprising personal hygiene with so much of public hygiene as every citizen should know. As a model exemplar of what a part of such teaching should be, I would point to a paper by Dr. Bowditch on "Preventive Medicine and the Physician of the Future," published in the latest report of the Massachusetts Board of Health, in which it is shown how hereditary tendency to disease may be held in abeyance by a properly regulated course of life.

Involving, as it does incidentally, elementary instruction in physics and chemistry as well as physiology, hygiene as I would have it taught would afford at least as good means of intellectual training as any study now embraced in undergraduate schemes; its principles being nothing if not rigorously logical inductions from demonstrable facts; whilst in addition to this disciplinary value, it possesses, from the utilitarian point of view, the greater recommendation of offering practical benefits, both present and future, to every class of the community. No more effective method could be devised for the suppression of ignorant quackery than to teach the public something of the philosophy of life and health; no better legacy could be prepared for posterity than to tell those who are to give birth to coming generations how to fulfill their parental duties and to transmit an unimpaired inheritance of health to their heirs; no sanitary legislation can do unaided such wide

good for public health as would be accomplished by thus enlisting the intelligent coöperation of every member of the community.

It would be easy to elaborate further argument, but I am conscious of having already multiplied words unnecessarily, in support of a proposition which the simplest statement might render self-evident. Doubts or objections, if any there be, can only emanate from pedagogical, not from physiological considerations, and to forestall these I would cite the high authority of Dr. Maudsley, who in his latest work, speaking of the avoidance not only of bodily, but of mental derangement, says: "Regarding the subject from a scientific point of view, the best education would seem to be that which was directed to teaching man to understand himself, and to understand the nature which surrounds him, and of which he is a part and a product; so to enable him, as its conscious minister and interpreter, to bring himself into harmony with nature in his thoughts and actions; and so to promote the progressing evolution of nature through him, its conscious self. The highest evolution of which man's being is capable, physically, morally, and intellectually, through knowledge of, and obedience to, those natural laws which govern not only the physical world, but, not less surely, every thought and feeling which it enters into his mind to conceive, must be the aim of an education founded on a truly scientific psychology."

In remarking upon Dr. Carroll's paper, Dr. C. R. Agnew, of New York, spoke also of some of the points raised by Dr. Lincoln, mentioning specially the prevalence of myopia and other affections of the eye in the schools of America and of Germany, particularly in the latter country. In the United States, he said: "Statistics did not show that pupils were much afflicted in that way; but he, as well as other physicians, could bear witness to the growing frequency of such affections. He spoke also of the dangers of cramming and of keeping girls of thirteen or fourteen years old for many hours at sedentary occupations. Seats in school-houses should be so modeled as to make any prone position of the head fatiguing. The light should come from above, over the shoulder. We never should have good results from education in our schools and colleges till sanitary science was taught as Dr. Carroll had suggested, and until a practical application was made of its principles."

A lady said she wished the Association would understand that the teachers were not entirely to blame. She was willing to divide the blame with the parents and the doctors, but did not wish to see the teachers charged with the destruction of the health of children, and the total annihilation of the American race. The discussion was continued by Mrs. Dall, of Boston, Mrs. Dr. Halleck, of New York, and others.



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